

1153712_1.TXT
SEQUENCE LISTING

<110> The Government of the United States as represented by the
Secretary, Department of Health and Human Services

<120> COMPOSITIONS AND METHODS FOR THE HIGH EFFICIENCY EXPRESSION OF
THE TRANSFORMING GROWTH FACTOR-BETA SUPERGENE FAMILY

<130> NIHA-0282

<140> 10/585,499

<141>

<150> PCT/US2005/00378

<151> 2005-01-06

<150> US 60/534,379

<151> 2004-01-06

<160> 17

<170> PatentIn version 3.5

<210> 1

<211> 390

<212> PRT

<213> Homo sapiens

<400> 1

Met Pro Pro Ser Gly Leu Arg Leu Leu Leu Leu Leu Leu Pro Leu Leu
1 5 10 15

Trp Leu Leu Val Leu Thr Pro Gly Arg Pro Ala Ala Gly Leu Ser Thr
20 25 30

Cys Lys Thr Ile Asp Met Glu Leu Val Lys Arg Lys Arg Ile Glu Ala
35 40 45

Ile Arg Gly Gln Ile Leu Ser Lys Leu Arg Leu Ala Ser Pro Pro Ser
50 55 60

Gln Gly Glu Val Pro Pro Gly Pro Leu Pro Glu Ala Val Leu Ala Leu
65 70 75 80

Tyr Asn Ser Thr Arg Asp Arg Val Ala Gly Glu Ser Ala Glu Pro Glu
85 90 95

Pro Glu Pro Glu Ala Asp Tyr Tyr Ala Lys Glu Val Thr Arg Val Leu
100 105 110

Met Val Glu Thr His Asn Glu Ile Tyr Asp Lys Phe Lys Gln Ser Thr
115 120 125

His Ser Ile Tyr Met Phe Phe Asn Thr Ser Glu Leu Arg Glu Ala Val
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130

135

Pro 145	Glu	Pro	Val	Leu	Leu 150	Ser	Arg	Ala	Glu	Leu 155	Arg	Leu	Leu	Arg	Leu 160
Lys	Leu	Lys	Val	Glu 165	Gln	His	Val	Glu	Leu 170	Tyr	Gln	Lys	Tyr	Ser 175	Asn
Asn	Ser	Trp	Arg 180	Tyr	Leu	Ser	Asn	Arg 185	Leu	Leu	Ala	Pro	Ser 190	Asp	Ser
Pro	Glu	Trp 195	Leu	Ser	Phe	Asp	Val 200	Thr	Gly	Val	Val	Arg 205	Gln	Trp	Leu
Ser	Arg 210	Gly	Gly	Glu	Ile	Glu 215	Gly	Phe	Arg	Leu	Ser 220	Ala	His	Cys	Ser
Cys 225	Asp	Ser	Arg	Asp	Asn 230	Thr	Leu	Gln	Val	Asp 235	Ile	Asn	Gly	Phe	Thr 240
Thr	Gly	Arg	Arg	Gly 245	Asp	Leu	Ala	Thr	Ile 250	His	Gly	Met	Asn	Arg 255	Pro
Phe	Leu	Leu	Leu 260	Met	Ala	Thr	Pro	Leu 265	Glu	Arg	Ala	Gln	His 270	Leu	Gln
Ser	Ser	Arg 275	His	Arg	Arg	Ala	Leu 280	Asp	Thr	Asn	Tyr	Cys 285	Phe	Ser	Ser
Thr	Glu 290	Lys	Asn	Cys	Cys	Val 295	Arg	Gln	Leu	Tyr	Ile 300	Asp	Phe	Arg	Lys
Asp 305	Leu	Gly	Trp	Lys	Trp 310	Ile	His	Glu	Pro	Lys 315	Gly	Tyr	His	Ala	Asn 320
Phe	Cys	Leu	Gly	Pro 325	Cys	Pro	Tyr	Ile	Trp 330	Ser	Leu	Asp	Thr	Gln 335	Tyr
Ser	Lys	Val	Leu 340	Ala	Leu	Tyr	Asn	Gln 345	His	Asn	Pro	Gly	Ala 350	Ser	Ala
Ala	Pro	Cys 355	Cys	Val	Pro	Gln	Ala 360	Leu	Glu	Pro	Leu	Pro 365	Ile	Val	Tyr
Tyr	Val 370	Gly	Arg	Lys	Pro	Lys 375	Val	Glu	Gln	Leu	Ser 380	Asn	Met	Ile	Val

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Arg Ser Cys Lys Cys Ser
385 390

<210> 2
<211> 390
<212> PRT
<213> Sus scrofa scrofa

<400> 2

Met Pro Pro Ser Gly Leu Arg Leu Leu Pro Leu Leu Leu Pro Leu Leu
1 5 10 15

Trp Leu Leu Val Leu Thr Pro Gly Arg Pro Ala Ala Gly Leu Ser Thr
20 25 30

Cys Lys Thr Ile Asp Met Glu Leu Val Lys Arg Lys Arg Ile Glu Ala
35 40 45

Ile Arg Gly Gln Ile Leu Ser Lys Leu Arg Leu Ala Ser Pro Pro Ser
50 55 60

Gln Gly Asp Val Pro Pro Gly Pro Leu Pro Glu Ala Val Leu Ala Leu
65 70 75 80

Tyr Asn Ser Thr Arg Asp Arg Val Ala Gly Glu Ser Val Glu Pro Glu
85 90 95

Pro Glu Pro Glu Ala Asp Tyr Tyr Ala Lys Glu Val Thr Arg Val Leu
100 105 110

Met Leu Glu Ser Gly Asn Gln Ile Tyr Asp Lys Phe Lys Gly Thr Pro
115 120 125

His Ser Leu Tyr Met Leu Phe Asn Thr Ser Glu Leu Arg Glu Ala Val
130 135 140

Pro Glu Pro Val Leu Leu Ser Arg Ala Glu Leu Arg Leu Leu Arg Leu
145 150 155 160

Lys Leu Lys Val Glu Gln His Val Glu Leu Tyr Gln Lys Tyr Ser Asn
165 170 175

Asp Ser Trp Arg Tyr Leu Ser Asn Arg Leu Leu Ala Pro Ser Asp Ser
180 185 190

Pro Glu Trp Leu Ser Phe Asp Val Thr Gly Val Val Arg Gln Trp Leu
195 200 205

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Thr Arg Arg Glu Ala Ile Glu Gly Phe Arg Leu Ser Ala His Cys Ser
210 215 220

Cys Asp Ser Lys Asp Asn Thr Leu His Val Glu Ile Asn Gly Phe Asn
225 230 235 240

Ser Gly Arg Arg Gly Asp Leu Ala Thr Ile His Gly Met Asn Arg Pro
245 250 255

Phe Leu Leu Leu Met Ala Thr Pro Leu Glu Arg Ala Gln His Leu His
260 265 270

Ser Ser Arg His Arg Arg Ala Leu Asp Thr Asn Tyr Cys Phe Ser Ser
275 280 285

Thr Glu Lys Asn Cys Cys Val Arg Gln Leu Tyr Ile Asp Phe Arg Lys
290 295 300

Asp Leu Gly Trp Lys Trp Ile His Glu Pro Lys Gly Tyr His Ala Asn
305 310 315 320

Phe Cys Leu Gly Pro Cys Pro Tyr Ile Trp Ser Leu Asp Thr Gln Tyr
325 330 335

Ser Lys Val Leu Ala Leu Tyr Asn Gln His Asn Pro Gly Ala Ser Ala
340 345 350

Ala Pro Cys Cys Val Pro Gln Ala Leu Glu Pro Leu Pro Ile Val Tyr
355 360 365

Tyr Val Gly Arg Lys Pro Lys Val Glu Gln Leu Ser Asn Met Ile Val
370 375 380

Arg Ser Cys Lys Cys Ser
385 390

<210> 3
<211> 414
<212> PRT
<213> Homo sapiens

<400> 3

Met His Tyr Cys Val Leu Ser Ala Phe Leu Ile Leu His Leu Val Thr
1 5 10 15

Val Ala Leu Ser Leu Ser Thr Cys Ser Thr Leu Asp Met Asp Gln Phe
20 25 30

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Met Arg Lys Arg Ile Glu Ala Ile Arg Gly Gln Ile Leu Ser Lys Leu
 35 40 45
 Lys Leu Thr Ser Pro Pro Glu Asp Tyr Pro Glu Pro Glu Glu Val Pro
 50 55 60
 Pro Glu Val Ile Ser Ile Tyr Asn Ser Thr Arg Asp Leu Leu Gln Glu
 65 70 75 80
 Lys Ala Ser Arg Arg Ala Ala Ala Cys Glu Arg Glu Arg Ser Asp Glu
 85 90 95
 Glu Tyr Tyr Ala Lys Glu Val Tyr Lys Ile Asp Met Pro Pro Phe Phe
 100 105 110
 Pro Ser Glu Asn Ala Ile Pro Pro Thr Phe Tyr Arg Pro Tyr Phe Arg
 115 120 125
 Ile Val Arg Phe Asp Val Ser Ala Met Glu Lys Asn Ala Ser Asn Leu
 130 135 140
 Val Lys Ala Glu Phe Arg Val Phe Arg Leu Gln Asn Pro Lys Ala Arg
 145 150 155 160
 Val Pro Glu Gln Arg Ile Glu Leu Tyr Gln Ile Leu Lys Ser Lys Asp
 165 170 175
 Leu Thr Ser Pro Thr Gln Arg Tyr Ile Asp Ser Lys Val Val Lys Thr
 180 185 190
 Arg Ala Glu Gly Glu Trp Leu Ser Phe Asp Val Thr Asp Ala Val His
 195 200 205
 Glu Trp Leu His His Lys Asp Arg Asn Leu Gly Phe Lys Ile Ser Leu
 210 215 220
 His Cys Pro Cys Cys Thr Phe Val Pro Ser Asn Asn Tyr Ile Ile Pro
 225 230 235 240
 Asn Lys Ser Glu Glu Leu Glu Ala Arg Phe Ala Gly Ile Asp Gly Thr
 245 250 255
 Ser Thr Tyr Thr Ser Gly Asp Gln Lys Thr Ile Lys Ser Thr Arg Lys
 260 265 270
 Lys Asn Ser Gly Lys Thr Pro His Leu Leu Leu Met Leu Leu Pro Ser
 275 280 285

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Tyr Arg Leu Glu Ser Gln Gln Thr Asn Arg Arg Lys Lys Arg Ala Leu
290 295 300

Asp Ala Ala Tyr Cys Phe Arg Asn Val Gln Asp Asn Cys Cys Leu Arg
305 310 315 320

Pro Leu Tyr Ile Asp Phe Lys Arg Asp Leu Gly Trp Lys Trp Ile His
325 330 335

Glu Pro Lys Gly Tyr Asn Ala Asn Phe Cys Ala Gly Ala Cys Pro Tyr
340 345 350

Leu Trp Ser Ser Asp Thr Gln His Ser Arg Val Leu Ser Leu Tyr Asn
355 360 365

Thr Ile Asn Pro Glu Ala Ser Ala Ser Pro Cys Cys Val Ser Gln Asp
370 375 380

Leu Glu Pro Leu Thr Ile Leu Tyr Tyr Ile Gly Lys Thr Pro Lys Ile
385 390 395 400

Glu Gln Leu Ser Asn Met Ile Val Lys Ser Cys Lys Cys Ser
405 410

<210> 4
<211> 412
<212> PRT
<213> Homo sapiens

<400> 4

Met Lys Met His Leu Gln Arg Ala Leu Val Val Leu Ala Leu Leu Asn
1 5 10 15

Phe Ala Thr Val Ser Leu Ser Leu Ser Thr Cys Thr Thr Leu Asp Phe
20 25 30

Gly His Ile Lys Lys Lys Arg Val Glu Ala Ile Arg Gly Gln Ile Leu
35 40 45

Ser Lys Leu Arg Leu Thr Ser Pro Pro Glu Pro Thr Val Met Thr His
50 55 60

Val Pro Tyr Gln Val Leu Ala Leu Tyr Asn Ser Thr Arg Glu Leu Leu
65 70 75 80

Glu Glu Met His Gly Glu Arg Glu Glu Gly Cys Thr Gln Glu Asn Thr
85 90 95

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Glu Ser Glu Tyr Tyr Ala Lys Glu Ile His Lys Phe Asp Met Ile Gln
 100 105 110
 Gly Leu Ala Glu His Asn Glu Leu Ala Val Cys Pro Lys Gly Ile Thr
 115 120 125
 Ser Lys Val Phe Arg Phe Asn Val Ser Ser Val Glu Lys Asn Arg Thr
 130 135 140
 Asn Leu Phe Arg Ala Glu Phe Arg Val Leu Arg Val Pro Asn Pro Ser
 145 150 155 160
 Ser Lys Arg Asn Glu Gln Arg Ile Glu Leu Phe Gln Ile Leu Arg Pro
 165 170 175
 Asp Glu His Ile Ala Lys Gln Arg Tyr Ile Gly Gly Lys Asn Leu Pro
 180 185 190
 Thr Arg Gly Thr Ala Glu Trp Leu Ser Phe Asp Val Thr Asp Thr Val
 195 200 205
 Arg Glu Trp Leu Leu Arg Arg Glu Ser Asn Leu Gly Leu Glu Ile Ser
 210 215 220
 Ile His Cys Pro Cys His Thr Phe Gln Pro Asn Gly Asp Ile Leu Glu
 225 230 235 240
 Asn Ile His Glu Val Met Glu Ile Lys Phe Lys Gly Val Asp Asn Glu
 245 250 255
 Asp Asp His Gly Arg Gly Asp Leu Gly Arg Leu Lys Lys Gln Lys Asp
 260 265 270
 His His Asn Pro His Leu Ile Leu Met Met Ile Pro Pro His Arg Leu
 275 280 285
 Asp Asn Pro Gly Gln Gly Gly Gln Arg Lys Lys Arg Ala Leu Asp Thr
 290 295 300
 Asn Tyr Cys Phe Arg Asn Leu Glu Glu Asn Cys Cys Val Arg Pro Leu
 305 310 315 320
 Tyr Ile Asp Phe Arg Gln Asp Leu Gly Trp Lys Trp Val His Glu Pro
 325 330 335
 Lys Gly Tyr Tyr Ala Asn Phe Cys Ser Gly Pro Cys Pro Tyr Leu Arg
 340 345 350

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Ser Ala Asp Thr Thr His Ser Thr Val Leu Gly Leu Tyr Asn Thr Leu
355 360 365

Asn Pro Glu Ala Ser Ala Ser Pro Cys Cys Val Pro Gln Asp Leu Glu
370 375 380

Pro Leu Thr Ile Leu Tyr Tyr Val Gly Arg Thr Pro Lys Val Glu Gln
385 390 395 400

Leu Ser Asn Met Val Val Lys Ser Cys Lys Cys Ser
405 410

<210> 5
<211> 18
<212> PRT
<213> Rattus rattus

<400> 5

Met Lys Trp Val Thr Phe Leu Leu Leu Leu Phe Ile Ser Gly Ser Ala
1 5 10 15

Phe Ser

<210> 6
<211> 36
<212> DNA
<213> Cricetulus griseus

<400> 6
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<210> 7
<211> 33
<212> DNA
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<400> 7
cgggtgttcg aattagtttt tgtattggaa ggg 33

<210> 8
<211> 56
<212> DNA
<213> Homo sapiens

<400> 8
ggttctgcct tttctacca ccatcaccac caccatcatc tgtccacctg caagac 56

<210> 9
<211> 30
<212> DNA

<213> Homo sapiens

<400> 9
tagtctcgag ttatcagctg cacttgcagg 30

<210> 10
<211> 45
<212> DNA
<213> Rattus rattus

<400> 10
aaagggggat ccgccacat gaagtgggta acctttctcc tcctc 45

<210> 11
<211> 45
<212> DNA
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<400> 11
agaaaaggca gaaccggaga tgaagaggag gaggagaaag gttac 45

<210> 12
<211> 39
<212> DNA
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<400> 12
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<210> 13
<211> 39
<212> DNA
<213> Sus scrofa scrofa

<400> 13
gttatctttg ctgtcacagg aacagtgggc actgaggcg 39

<210> 14
<211> 33
<212> DNA
<213> Sus scrofa scrofa

<400> 14
ggatccctgt ccacctcaa gaccatcgac atg 33

<210> 15
<211> 33
<212> DNA
<213> Sus scrofa scrofa

<400> 15
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<210> 16
<211> 20
<212> PRT

<213> Artificial Sequence

<220>

<223> Synthetic construct

<400> 16

His His His His His His His His Leu Ser Thr Ser Lys Thr Ile Asp
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Met Glu Leu Val
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<210> 17

<211> 20

<212> PRT

<213> Sus scrofa scrofa

<400> 17

Ala Leu Asp Thr Asn Tyr Cys Phe Ser Ser Thr Glu Lys Asn Cys Cys
1 5 10 15

Val Arg Gln Leu
20